

## **REMARKS**

As a preliminary matter, Applicant notes that the Examiner neglected to initial one of the references listed on the Information Disclosure Citation (Form PTO-1449) filed with the April 6, 2007 Information Disclosure Statement (IDS). Since this appears to be an inadvertent error, Applicant respectfully requests that the Examiner initial the box next to the "Introduction to Algorithms" publication listed in the "Other Documents" section of the form. If there was another reason for not initialing the box, Applicant respectfully requests an explanation in the next communication from the Examiner.

Claims 1-8 stand rejected under 35 U.S.C. § 101 as allegedly being directed to non-statutory subject matter. Applicant respectfully traverses this rejection.

The Examiner correctly states that claims will be considered as statutory if they are directed to a practical application that produces a useful, concrete, and tangible result. In response, Applicant respectfully submits that the claims at issue are statutory. More specifically, Applicant will demonstrate that the final result of the claimed invention is useful, concrete, and tangible, as discussed in MPEP §§ 2106(IV)(C.2)(2)(a)-(c).

First, Applicant respectfully submits that the claims provide a useful result because the utility is specific, substantial, and credible, as discussed in MPEP §§ 2107-2107.01. Applicant submits that one of ordinary skill in the art would recognize the utility of the invention recited in the present claims as providing a method in which the hardware of a shared-memory type scalar parallel computer is optimized to obtain an inverse matrix at high speed. This asserted utility clearly meets the minimal requirements as detailed at MPEP § 2107(II)(1) (i.e., "the applicant has asserted that the claimed invention is useful

for any particular, practical purpose (*i.e.*, it has a “specific and substantial utility”) and the assertion would be considered credible by a person of ordinary skill in the art...” (emphasis added).

The utility is specific because it is narrowly directed to calculating an inverse matrix through the steps detailed in the claims. Moreover, the utility of calculating an inverse matrix as detailed in the claims for parallel processing of a shared-memory type scalar parallel computer is specific to the claimed subject matter of computer processing, and provides a benefit to the public in that it allows computers to operate faster, which reduces power consumption and computing time. *See* MPEP § 2107.01(I)(A) (“A specific utility is specific to the subject matter claimed . . . and can provide a well-defined and particular benefit to the public” (internal quotation marks omitted)).

The utility of the present invention is also substantial, and not a throw-away utility such as the example provided in MPEP §2107(II)(1)(i) of using the invention as a landfill. The invention is useful in its current form, as claimed and disclosed, for optimizing the process of calculating an inverse matrix, and does not require any further research. *See* MPEP § 2107.01(I)(B) (“[A]n application must show that the invention is useful to the public as disclosed in its current form, not that it may prove useful at some future date after further research. Simply put, to satisfy the ‘substantial’ utility requirement, an asserted use must show that the claimed invention has a significant and presently available benefit to the public.... Thus, a “substantial utility” defines a “real world” use. Utilities that require or constitute carrying out further research to identify or reasonably confirm a “real world” context of use are not substantial utilities.”).

Regarding the credibility of the asserted utility, surely the specific disclosure of the method of calculating an inverse matrix in the present Specification demonstrates the credibility of the asserted utility to one of ordinary skill in the art. Thus, the requirements set forth in MPEP § 2107 for utility are relatively minimal and have clearly been met and exceeded by the present invention.

Second, Applicant respectfully submits that the claimed invention produces a tangible result because the claimed result of calculating the inverse matrix, which includes steps of storing various data in memory, is a real world result which meets the guidelines of MPEP § 2106(IV)(C.2)(2)(b), which states that a claim “must set forth a practical application . . . to produce a real world result.” As further guidance, MPEP §2106(IV)(C.2)(2)(b) states that “[t]he tangible requirement does not necessarily mean that a claim must be tied to a particular machine or apparatus or must operate to change articles or materials to a different state or thing.” However, the claimed invention is actually tied to a specific apparatus (a shared-memory type scalar parallel computer), which strengthens Applicant’s argument that the claimed invention meets the tangibility requirement, and that the claimed invention is not merely an abstract process without a practical application. Accordingly, Applicant respectfully submits that the practical application of storing data to memory and improving parallel processing in a shared-memory type scalar parallel computer, including calculation of inverse matrices, is a real world result.

Third, with regard to the requirement that the result be concrete, Applicant respectfully submits that this requirement is met because the result is substantially repeatable. *See* MPEP §2106(IV)(C.2)(2)(c) (“the process must have a result that is

substantially repeatable” and the “opposite of ‘concrete’ is unrepeatable and unpredictable.”). In the present invention, when the same claimed steps are followed, the same result will be obtained. Thus, the result is “concrete” within the meaning of MPEP § 2106(IV)(C.2)(2)(c).

Finally, the claimed invention does not preempt all methods of calculating an inverse matrix. Instead, the claims define specific steps such as specifying a square block matrix and storing it in memory, decomposing the matrix into several parts and storing each part into a subarray, dividing decomposed blocks through parallel operation of multiple processors, and updating the decomposed blocks in a specific manner. Thus, other methods of obtaining an inverse matrix not including these steps are not preempted by the current claims.

For at least the reasons stated above, Applicant asserts that the claims are directed to statutory subject matter, and request withdrawal of the § 101 rejection of Claims 1-8.

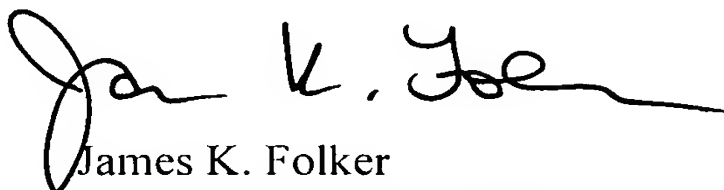
Additionally, regarding claims 5-8, the claims have been amended to recite “a computer readable medium storing a program.” Applicant respectfully submits that the § 101 rejection should be withdrawn because these claims include functional descriptive material (i.e., a computer program which imparts functionality when employed as a computer component) recorded on a computer readable medium. *See* MPEP §2106.01 (“When functional descriptive material is recorded on some computer-readable medium, it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since the use of technology permits the function of the descriptive material to be realized.”); MPEP § 2106.01(I) (“a claimed computer-readable medium encoded with

a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory.'"). Thus, the §101 rejection of Claims 5-8 should be withdrawn for this reason as well.

For all of the foregoing reasons, Applicant requests reconsideration and allowance of the claimed invention. Should the Examiner be of the opinion that a telephone conference would aid in prosecution of the application, or that outstanding issues exist, the Examiner is invited to contact the undersigned attorney.

Respectfully submitted,

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